

1 1. A compound soft jaw to retain a workpiece within a machine vise  
2 comprising:

3 a primary jaw member secured to a receiving plate of said machine  
4 vice; and

5 a first secondary jaw member secured to said primary jaw member,  
6 said first secondary jaw member being machined to have a  
7 cutting template formed therein such that as the workpiece is  
8 secured within said machine vise, said workpiece is machined  
9 according to said template;

10 wherein upon completion of machining of said workpiece, said first  
11 secondary jaw member is replaceable by a second secondary  
12 jaw member into which a second cutting template is formed.

1 2. The compound soft jaw of claim 1 wherein said second secondary jaw  
2 member is the first secondary jaw member removed from said primary jaw  
3 member, rotated, and re-secured to said primary jaw member, with a  
4 second cutting template formed therein.

1 3. The compound soft jaw of claim 1 further comprising at least one of a first  
2 type fastener to secure the primary jaw member to the receiving plate.

1 4. The compound soft jaw of claim 1 wherein two of the first type fasteners  
2 secure the primary jaw member to the receiving plate.

5. The compound soft jaw of claim 4 wherein the two first type fasteners secure the primary jaw member to the receiving plate with a torque of greater than approximately 250 in./lbs.

6. The compound soft jaw of claim 4 wherein the two first type fasteners are ½ "X 13 cap screws.

7. The compound soft jaw of claim 1 wherein the primary jaw member is formed of a material selected from the group of materials consisting of aluminum, steel, brass, copper, plastic, wood, and wood products..

8. The compound soft jaw of claim 3 wherein the primary jaw member has openings formed therein to accept said fasteners so as to secure said primary jaw member fastener to said receiving plate.

9. The compound soft jaw of claim 1 further comprising at least one of a second type fastener to secure the secondary jaw member to the primary jaw member.

10. The compound soft jaw of claim 9 wherein three second type fasteners secure the secondary jaw member to the primary jaw member.

11. The compound soft jaw of claim 10 wherein the three second type fasteners secure the secondary jaw member to the primary jaw member with a torque of greater than approximately 250 in./lbs.

1 12. The compound soft jaw of claim 10 wherein the three second type  
2 fasteners are ¼" X 20 cap screws.

1 13. The compound soft jaw of claim 1 wherein the first and second secondary  
2 jaw members are formed of materials selected from the group of materials  
3 consisting of aluminum, steel, brass, copper, plastic, wood, and wood  
4 products.

1 14. The compound soft jaw of claim 1 wherein the primary jaw member has a  
2 height less than a height of the receiving plate and said secondary jaw  
3 member is forced into contact with a surface of the receiving plate onto  
4 which said primary jaw member is secured, such that said secondary jaw  
5 member is supported by the receiving plate and prevent from movement  
6 during securing said workpiece within said machine vise.

1 15. A machine vise for securing a workpiece for machining comprising:

2 a vise base joined to a machine tool;

3 a first receiving plate coupled to said vise base;

4 a second receiving plate coupled to said vise base such that the  
5 first and second receiving plates are movable adjustable to  
6 retain said workpiece;

7 a first compound soft jaw attached to the first receiving plate; and

8 a second compound soft jaw attached to the second receiving plate  
9 such that the workpiece is retained between the first and second  
10 compound soft jaws for machining by said machine tool;

11 said first and second compound soft jaws each comprising:

12 a primary jaw member secured to one receiving plate of the first  
13 and second receiving plates; and

14 a first secondary jaw member secured to said primary jaw  
15 member, said first secondary jaw member being machined  
16 to have a cutting template formed therein such that as the  
17 workpiece is secured within said machine vise, said  
18 workpiece is machined according to said template;

19 wherein upon completion of machining of said workpiece, said  
20 first secondary jaw member is replaceable by a second  
21 secondary jaw member into which a second cutting template  
22 is formed.

1 16. The machine vise of claim 15 wherein said second secondary jaw member  
2 is the first secondary jaw member removed from said primary jaw  
3 member, rotated, and re-secured to said primary jaw member, with a  
4 second cutting template formed therein.

- 1 17. The machine vise of claim 15 further comprising at least one of a first type  
2 fastener to secure the primary jaw member to the receiving plate.
- 1 18. The machine vise of claim 15 wherein two of the first type fasteners  
2 secure the primary jaw member to the receiving plate.
- 1 19. The machine vise of claim 18 wherein the two first type fasteners secure  
2 the primary jaw member to the receiving plate with a torque of greater  
3 than approximately 250 in./lbs.
- 1 20. The machine vise of claim 18 wherein the two first type fasteners are ½ "X  
2 13 cap screws.
- 1 21. The machine vise of claim 15 wherein the primary jaw member is formed  
2 of a material selected from the group of materials consisting of aluminum,  
3 steel, brass, copper, plastic, wood, and wood products.
- 1 22. The machine vise of claim 17 wherein the primary jaw member has  
2 openings formed therein to accept said fasteners so as to secure said  
3 primary jaw member fastener to said receiving plate.
- 1 23. The machine vise of claim 15 further comprising at least one of a second  
2 type fastener to secure the secondary jaw member to the primary jaw  
3 member.
- 1 24. The machine vise of claim 23 wherein three second type fasteners secure  
2 the secondary jaw member to the primary jaw member.

- 1 25. The machine vise of claim 24 wherein the three second type fasteners  
2 secure the secondary jaw member to the primary jaw member with a  
3 torque of greater than approximately 250 in./lbs.
- 1 26. The machine vise of claim 24 wherein the three second type fasteners are  
2 ¼" X 20 cap screws.
- 1 27. The machine vise of claim 15 wherein the first and second secondary jaw  
2 members are formed of materials selected from the group of materials  
3 consisting of aluminum, soft steel, brass, copper, plastic, wood, and wood  
4 products.
- 1 28. The machine vise of claim 15 wherein the primary jaw member has a  
2 height less than a height of the receiving plate and said secondary jaw  
3 member is forced into contact with a surface of the receiving plate onto  
4 which said primary jaw member is secured, such that said secondary jaw  
5 member is supported by the receiving plate and prevent from movement  
6 during securing said workpiece within said machine vise.
- 1 29. A method for clamping a workpiece to secure said workpiece for  
2 machining comprising the steps of:
- 3 providing and joining a vise base to a machine tool;
- 4 coupling a first receiving plate to said vise base;

5 coupling a second receiving plate to said vise base such that the  
6 first and second receiving plates are movably adjustable with  
7 respect to each other to retain said workpiece;  
8 forming and attaching a first compound soft jaw to the first receiving  
9 plate;  
10 forming and attaching a second compound soft jaw to the second  
11 receiving plate; and  
12 retaining the workpiece between the first and second compound  
13 soft jaws for machining by said machine tool;  
14 said first and second compound soft jaws each formed and  
15 attached by the steps of:  
16 constructing a primary jaw member,  
17 securing said primary jaw member to a one receiving plate of  
18 the first and second receiving plates, and  
19 constructing a first secondary jaw member,  
20 securing said first secondary jaw member to said primary  
21 jaw member,

22 machining said first secondary jaw member to form a cutting  
23 template therein such that upon retaining the workpiece,  
24 said workpiece is machined according to said template,  
25 upon completing machining of said workpiece, replacing said  
26 first secondary jaw member by a second secondary jaw  
27 member, and  
28 machining a second cutting template into said second  
29 secondary jaw member for machining of a subsequent  
30 workpiece.

1 30. The method of claim 29 further comprising steps of:

2 forming the second secondary jaw member by the steps of:

3 removing the first secondary jaw member from said primary jaw  
4 member,

5 rotating, and

6 re-securing said first secondary jaw member to said primary jaw  
7 member.

1 31. The method of claim 29 wherein securing the primary jaw member to one  
2 receiving plate of the first and second receiving plates comprises the steps  
3 of:



providing at least one of a first type fastener,

attaching said first fastener type to said primary jaw member, and

securing said primary jaw member to the receiving plate.

32. The method of claim 31 wherein two of the first type fasteners secure the primary jaw member to the receiving plate.

33. The method of claim 32 wherein the two first type fasteners secure the primary jaw member to the receiving plate with a torque of greater than approximately 250 in./lbs.

34. The method of claim 32 wherein the two first type fasteners are ½ "X 13 cap screws.

35. The method of claim 29 wherein the primary jaw member is formed of a material selected from the group of materials consisting of aluminum, soft steel, brass, copper, plastic, wood, and wood products.

36. The method of claim 31 further comprising the steps of:

forming openings in said primary jaw member to accept said

fasteners so as to secure said primary jaw member fastener to

said receiving plate.

37. The method of claim 29 wherein securing the secondary jaw member to the primary jaw member comprises the steps of:

providing at least one of a second type fastener,

attaching said second fastener type to said secondary jaw member,

and

securing the secondary jaw member to the primary jaw member.

38. The method of claim 37 wherein three second type fasteners secure the secondary jaw member to the primary jaw member.

39. The method of claim 38 wherein the three second type fasteners secure the secondary jaw member to the primary jaw member with a torque of greater than approximately 250 in./lbs.

40. The method of claim 38 wherein the three second type fasteners are ¼" X 20 cap screws.

41. The method of claim 29 wherein the first and second secondary jaw members are formed of materials selected from the group of materials consisting of aluminum, soft steel, brass, copper, plastic, wood, and wood products.

42. The method of claim 29 wherein forming the primary jaw member comprising the step of:

constructing said primary jaw member to a height less than a height of the receiving plate;

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